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The next Speaker's Night will be Thursday, March 10th. Come and join us! Jim Wilson will be talking on the excavations Archaeologix has conducted at the Western Fair Grounds cemetery.

This is the first issue of 2005 and you know what that means, membership fees are now due!!!

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The meeting will be held at 8 pm at the London Museum of Archaeology, 1600 Attawandaron Road, near the corner of Wonderland & Fanshawe Park Road, in the northwest part of the city.

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Student	$15.00
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THE HAMILTON SITE: ESTABLISHING THE HANDEDNESS OF POTTERS

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Introduction

Archaeological investigation in the past has been predominantly focused on the interpretations of larger trends across time and culture. The post-processual movement inspired archeologists to look for smaller trends that took place in cultures that were directly or indirectly responsible for the larger patterns that were witnessed. Hodder (1986) believed that smaller trends in culture history could be determined by examining agency in the archaeological record. The search for individuals or agency in the archaeological record has been most successful in historical archaeology, where the identities of actual people can be discovered and interpreted (Hodder 1999). Prehistoric archaeologists are now beginning to address the issue of agency in archaeology as the lives of nameless people of the distant past are understood.

This paper investigates these smaller trends in the archaeological record by examining the Hamilton site, a proto-historic Neutral village located in southern Ontario (Lennox 1977). At the Neutral Hamilton site, the influx of shell-tempering has led to many theories about the movement of this technology. This is the larger trend that we see in the archaeological record. This study will try to distinguish the handedness of Neutral potters at the Hamilton site to interpret the smaller trends and changes within the site that resulted in the influx of shell tempering technology within the northern cluster of Neutralia.

Shell and Grit Tempered Ceramics

The type of temper that is employed is a conscious choice made by the potter. Grit and shell tempers are two options that the Neutral potters of Ontario utilized.

Temper is any non clay inclusions that is added by the potter or is naturally present in the clay (Skibo, Schiffer and Reid 1989:123). Tempers actually weaken fired clay but are needed to reduce shrinking and cracking that take place during the firing of the pot and also help to prevent cracking during use (Braun 1983:123). Tempering materials are also used to increase the work-ability of the clay. There are many types of tempering materials available for potters, these include: organic grasses, crushed clay vessels, bone, crushed shell, sand or grit, minerals and even blood (Bronitsky and Hamer 1986:89). I will focus on discussing the characteristics of grit and shell tempers as they specifically relate to Neutral pottery practices.

Many experiments have been conducted to illustrate the different physical and manufacturing properties between shell and grit tempered ceramics. I will first consider the amount of temper used in the pottery process. Bronitsky and Hamer (1986) have found that the amount of temper does not affect the weight loss in firing, cracking or shatter values of pottery. There are some

differences in the technological affects of grit and shell tempers based on the size of the actual temper material. Feathers (1989) repeated Bronitsky and Hamer's (1986) tests and found that differences in tempering size are only significant for shell tempers, where coarse grade tempers are much stronger than finer tempers.

The strength of pots tempered with shell and grit tempers has been measured in both Brontisky and Hamer's (1986) and Feather's (1989) experiments. These tests show that shell tempered pots were stronger on average than grit tempered wares (O'Brien et al. 1994:288). The tests also revealed that shell tempered pots had a higher 'toughness' ratio since it took them longer to break and there were longer lag times in shell tempered pots between crack initiation and the total failure of the pot (O'Brien et al. 1994:288). Therefore, shell tempered pots are less likely to break in the manufacturing process than pottery made with grit temper.

The strength of shell tempered pots can be explained by looking at the calcite grains that are contained in shell. The calcite grains appear under a microscope as long longitudinal bundles that align themselves parallel to areas of stress, which creates a very strong resistance to cracking (Feather 1989:581). Some archaeologists have argued that the work-ability of the clay paste used to construct shell tempered pots increases compared to grit tempered ceramics (see Million 1975, O'Brien et al 1994).

Wall thickness is another factor that has been associated with temper choice. Braun (1987) has shown that shell-tempered pottery walls are on average 5 mm thinner than grit tempered pots. Another interesting difference that has been associated with tempering material and wall thickness was the type of food cooked in the vessels. Braun (1987) has shown that decreasing wall thickness is directly related to the increasing appearance of starchy and oily seeds. As the thickness of the pottery wall decreases the heat conductivity of the pot increases which results in higher temperatures to cook the food faster. Since higher temperatures are needed to cook these types of food, and wall thickness is a factor determined usually by the skill of the potter and the tempering material used, archaeologists have concluded that shell tempered wares are an 'evolutionary' advancement compared to their previous grit tempered pots (O'Brien et al. 1994).

It is intriguing, that past studies of the different characteristics of shell and grit tempered pottery ignored the fact that pottery could have been made with both tempering materials. The shift from grit to shell tempered wares in the Northeast was a complete replacement; however, there are pottery sherds that exhibit both of these temper materials (O'Brien et al. 1994:287). In my own study of the pottery sherds at the Hamilton site it was difficult to see the percentages of shell and grit temper in each sherd, therefore, when shell was identified in each piece, I would count that as being shell tempered. Therefore, a comparison of the percentages of the combination of shell and grit temper should be explored in future research.

The Hamilton Site

The Hamilton site is unique among Neutral villages as there are a high percentage of shell-tempered pottery sherds in the artifact collection (Table 1). The site was excavated in 1970, 1972 and 1976 by Paul Lennox of McMaster University. The site was occupied by the Iroquoian

speaking Neutral culture from A.D. 1638 to A.D. 1651, when it was abandoned due to the movement of Iroquoian raiding tribes from the south-east (Lennox 1977). The Hamilton site appears to be a village complex as it is situated amidst many other satellite communities which formed the Spencer-Bronte Creek cluster (Lennox and Fitzgerald 1990:413). The site excavation revealed four longhouses that were completely excavated and one house that was only partially excavated. Three middens were located at the site that produced most of the ceramics analyzed. There are likely more houses and middens unexcavated at the site.

Table 1: Neutral Sites that Contain Shell Tempered Pottery (Analysable Rims only)

Site	**Age**	**Temper**	**N**
Walker	AD 1626-40	98.4% Grit 1.6% Shell	816
Hamilton	AD 1638-51	31.4% Grit 68.6% Shell	1315
Hood	AD 1630-41	76.5% Grit 23.5% Shell	119
Bogle I	AD 1630-41	73.3% Grit 26.6% Shell	24
Bogle II	AD 1630-41	54.6 % Grit 45.4% Shell	22
Christianson	AD 1615-51	86.7% Grit 13.3%Shell	887

The appearance of shell-tempered pottery sherds at the Hamilton site has led archaeologists to assume that there was an outside influence on the Hamilton village and the Spencer Bronte-Creek cluster (Jamieson 1992; Lennox 1977; Lennox and Fitzgerald 1990; Stothers 1981; Stothers et al. 1999). Lennox (1977) suggests that the influences for shell-tempered pottery originate from various cultures from the south that used shell tempering technology such as the Wittelesey, Fort Ancient and Monogahela cultures. Stothers (1981) offers the same interpretation and believes that shell-tempered influence came from the Fire Nation in the Ohio region. The Jesuit writings of the 15th century relate that the Neutral and the Fire Nation were at war with each other up until the Iroquoian conquest of the region (Thwaites 1959). The two collections from Indian Hills, a Fire Nation site (1559-1650), and the Hamilton site were compared by the authors and they believed that both sets of pottery collections were identical. Lennox and Fitzgerald (1990) suggest that the influence of shell temper on the Neutral was specific to only the Hamilton Site and surrounding sites in the Bronte-Creek Cluster. They believe the influence of shell temper came from the Ohio and Michigan regions; however, shell temper was not used in sites between these two regions (Lennox and Fitzgerald 1990:418). Jamieson (1992) also agrees that the movement of shell temper to the northern Spencer Bronte-creek cluster was

through contact with outside groups to the south of the Neutral and traces the movement of shell temper technology back to the Mississippian cultures. Stothers et al. (1999) have recently examined the adoption of shell tempered pottery in the Lake Erie region. They have shown that the appearance of shell temper technology in the region began in A.D. 1450 and took one hundred years to completely replace grit tempered wares (Stothers et al. 1999:16). This enabled the spread of shell temper to the Hamilton Site region after A.D. 1550. In summary, all the literature agrees that the movement of shell temper technology to the Hamilton site was from an outside source, whether it be from the Ohio/Michigan region or western New York.

I will argue that there are three leading hypotheses to explain the movement of shell tempered pottery from outside sources into the Neutral region. The movement of this technology can clearly reflect the movement of people, ideas or borders.

The Movement of People

The most direct way for ideas to be transferred from one area to another is through the actual movement of people practicing those ideas. Morse and Morse (1983:233) have shown that the initial replacement of grit-tempered wares by shell tempering was due to the movement of a new group of people into the Mississippian area in the Late Woodland. The identical scenario may have taken place as foreign potters from the south brought their shell tempering ideas into Neutralia. With regards to the movement of shell tempered pottery, archaeologists have argued that artisans using shell temper were responsible for the influx of shell temper in the region of the Hamilton Site (Lennox 1977; Lennox and Fitzgerald 1990).

The Jesuit accounts recorded that the Neutral were at war with the Fire Nation tribes to the south until the expansion of the Five Nation Iroquois (Thwaites 1959: 22:195, 27:25). They relate that in A.D. 1640, 1641 and 1642 the Neutral captured a total of 1,070 Fire Nation people (Stothers 1981:52). The influx of Fire Nation people into the Neutral area could have resulted in the movement of technologies such as shell tempered ceramics. Since shell tempering is only found in the Hamilton site area, the movement of large groups of people should be represented in village sites in this area (Stothers 1981:52). At the Hamilton site, Lennox (1977) has shown that house two had undergone an expansion sometime during the occupation of the village. The expansion of the house could have been constructed to accommodate the Fire Nation prisoners taken from the A.D.1640-1642 raids.

The majority of the literature supports the claim that Fire Nation prisoners were taken by the Neutral in their raiding activities as war prisoners (Lennox 1977; Noble 1985; Stothers 1981). However, the raiding of the Fire Nation may have been organized to replace population reductions that occurred with the massive small pox epidemics in the A.D. 1630's. Fitzgerald (1990) argues that the raiding activities that the Neutral people engaged in with the Fire Nation populations from A.D. 1634-1642 were conscious efforts to increase Neutral populations that had earlier been eradicated by disease. Evidence for this increase of population can be seen in the expansion of house two at the Hamilton site, and multiple site expansions at the MacPherson, Christianson, Robertsen, Shaver Hill and Dwyer sites (Fitzgerald 1990:285). These sites were closer to the northern border of Neutralia and would have been in contact with the Huron tribes

and Europeans. It would seem evident that these Neutral sites would have been the most severely affected by the small pox epidemics, creating the need for a large replacement population. Noble (1985) has argued that the foreign policy of the Neutral had been to accept people from different cultures into its own culture. This can be illustrated in the Neutral policy to stay impartial to the Huron/Iroquoian conflicts.

To sum, the movement of actual people is a viable explanation for the influx of shell tempered wares into some Neutral sites. The destination of these prisoner/replacement populations would have been the Spencer Bronte-Creek cluster of sites, from which shell tempered ceramics have been recovered. The movement of people suggests that actual groups of foreign potters came and made their traditional ceramics in a foreign region.

Movement of Ideas

The movement of ideas is separate from the movement of people because it suggests that the increase in shell tempered wares was due to a change in Neutral pottery production by Neutral potters, rather than the influence of foreign potters. The movement of ideas can be broken down into sections that relate to issues of trade/contact, resistance and cultural evolution. Trade is one medium where ideas are transmitted into a culture from an outside source. Jamieson (1992:78) has shown that the Neutral traded heavily with outside communities, especially on the eastern coast for marine shell. The Neutral were at war with their neighbors to the south which excluded them from the trade routes that ultimately connected to the Mississippian cultures. Being excluded from trade routes does not necessarily prevent ideas from the Mississippian cultures from being transmitted into Neutralia. In fact, we see the opposite occurring, as the Neutral tribes seem to have been influenced more from east coast cultures and Mississippian cultures than from the Five Nation Iroquois. This influence is shown in the Neutral adoption of vertically separated clay or capped ossuary cemeteries (Jamieson 1992:79). This style of burial is often seen in Atlantic coast cultures and cultures in the south near the Allegheny drainage, but is absent in Five Nation Iroquoian sites. If burial customs can be passed through trade or conflict with other groups, then it would seem reasonable that ideas concerning pottery manufacture could also be transmitted.

Resistance also has a role in the movement of ideas. Resistance to another culture's ideas is an emerging theme in anthropological theory. Resistance can take place between two groups that are in conflict or between two groups that may be in a harmonious relationship. The Neutral were in contact with many groups and had the opportunity to employ some kind of resistance. The Neutral policy to resist interference in Huron and Iroquoian raids was a conscious effort to not participate in that war. If we look at the patterning of shell tempered ceramics in Neutral sites, we can see a large area that is void of shell temper pottery between the northern Spencer Bronte-creek cluster and the Fire Nation sites in Michigan and Ohio. We would expect to find this pattern in association with a group of people that chooses to resist ideas from an enemy nation. Sites closer to the Fire Nation, and subsequently the areas of conflict, have little or no shell tempered ceramics. Areas in the northern cluster that are furthest away from the conflict, such as the Hamilton Site, show the greatest influence of this 'foreign' idea. Is the distribution of shell tempered ceramics a clear indication of Neutral resistance of Fire Nation ideas? To answer

this question we should look back at the benefits of shell tempered pottery and judge whether the benefits of shell temper are greater than motives for cultural resistance.

The movement of ideas can also be looked at through an evolutionary perspective. Schiffer and Skibo (1987:595) have argued that changes in technology result from the growth of 'techno science', which is the direct result of trial and error on behalf of the artisans to solve practical problems. Likewise, O'Brien et al. (1994) have argued that ideas about changing pottery technology should be examined in terms of evolutionary theory. It is also important to remember that there is always an element of the artisan choice in the manufacturing of pottery (Schiffer and Skibo 1987:29). There is a conscious decision to choose shell temper over grit temper whether it is an act of resistance or for technical practicality. Therefore, the type of evolution that I mention here is not necessarily survival of the best method to construct a pot, but it is an enquiry into the background circumstances that allowed shell-tempered ceramic production.

I have earlier mentioned that the utilization of shell temper in ceramics results in pottery that is stronger and has thinner walls. The thinner walls are of significant importance especially when the foods being consumed require higher cooking temperatures. Schiffer and Skibo (1987) have shown that in the first ceramic pots of the Late Archaic, pottery manufacture was expedient and did not require high cooking temperature. The hunter-gatherer settlement patterns of the Late Archaic required foods that could be easily cooked for short periods of time. Therefore, these pots were thick walled, crudely constructed and easy to produce. As subsistence changed, especially in the proto-historic period where groups such as the Neutral relied heavily on agriculture, the needs and demands of pottery also changed. Isotope analysis has shown that maize consumption increased from 55% of the diet in A.D. 1200 to 77% of the total diet in A.D. 1643 for areas related to Fire Nation sites (Stothers and Berchtel 1987:145). We can assume that the same increase occurred in the Neutral region where environmental conditions are very similar to Ohio and Michigan. As a direct consequence, there was a need for pottery that would be able to generate higher cooking temperatures. Shell-tempered pottery was the solution. The mutual relationship between population increases during the Late Woodland and proto-historic period, and the increase in agricultural dependence led to the exploitation of lower ranked food sources, which required more heat to cook. Increases in population required more food being consumed with less time to prepare food for consumption. The result is a relationship between the manufacturing of shell-tempered ceramics and issues of demography, nutrition, storage and labour organization (Osborn 1988). Osborn (1988:37) states:

> Given this evolutionary ecological perspective, archaeologists must view the appearance and persistence of shell-tempered ceramics as a technological/ behavioral response to stress instead of a cultural innovation based on cognition.

Therefore, the explanation for the increase in shell-tempered wares could be described as an evolutionary step that had to be taken as populations in Neutralia increased and agriculture forced people to produce large amounts of food that required higher cooking temperatures.

Movement of Borders

The final hypothesis that I wish to comment on is what I have termed the movement of borders. Green and Perlman (1985:12) have stated that the study of culture requires us to look at problems in terms of an open social system; however, archaeologists construct closed systems to deal with the research problems that they examine. The shared belief that there is a cultural difference between the Neutral and the Fire Nation cultures is understandable, since they were in conflict with each other and spoke different languages. However, we should look at this problem as an 'open social system' since all boundaries are to some extent open (Hodder 1986).

If we look at this problem as an open social system we can visualize two 'groups' of people that are in conflict with each other. The stability and cohesiveness of these two groups has been questioned by Fitzgerald (1990:255) who suggests the Neutral confederacies should be studied as distinct units from each other. Noble (1985) has tried to reconstruct Neutral organization and focused his research around the concept of the Neutral representing a chiefdom; however, this research is not convincing. The organization of the Neutral can be looked at in terms of smaller hamlet communities that surround a large village or town that is made up of separate clusters of sites. These clusters were in close relationships with each other but were not separate entities such as the Five Nation Iroquois (Fitzgerald 1990:256). An example of this type organization can be exemplified in the conflict between the Neutral and the Fire Nation. It would have required a large organization of Neutral clusters to engage in such conflicts. However, if we look at each cluster as distinct groups we can see many differences between these groups, which call into question the concept of borders, and social beliefs of the entire Neutral. The appearance of shell tempered wares in the northern cluster of Neutralia shows a distinct difference between one cluster of sites and the rest of Neutralia. Therefore, it is possible that the groups may have had different ideas of foreign policy (Fitzgerald 1990:376).

The northern cluster of sites, including the Hamilton site, was closest to European influence. I had previously mentioned that this was one avenue that brought disease, but it also generated an access to European goods. Fitzgerald (1990:253) relates that the introduction of European trade and the Fire Nation wars caused a west to east migration of Neutral people early in the 17th century. Contact between the Neutral of the northern clusters and the Fire Nation has been argued to go back further than the A.D. 1640s' raids. Fitzgerald (1990:296) believes that the lack of evidence for early sites in the northern cluster may relate to the abandonment of villages further west to move closer to the European influences. These groups would have been previously in close contact with the Fire Nation and then moved further away. The opportunity for trade may have been enticing for some of the Fire Nation populations and may have caused the movement of actual Fire Nation people from their region and into the northern clusters of Neutralia. These ideas cast doubt on the idea of a closed border between the Fire Nation and the Neutral. There are many consequences of the idea that there was an open border between the two sides. The Fire Nation 'captives' may have been groups of people freely moving across into Neutralia to participate in European trading. The connections that the Fire Nation and the northern cluster once had would have created knowledge of the two groups and may suggest a more homogenous relationship between the northern Neutral and the Fire Nation. These ideas

call into question the assumption of definite borders, and are easily visualized in this situation where there is limited organization among the Neutral and closer bonds between conflicting groups than once thought.

An Integrated Approach to the Movement of Shell Tempered Pottery in Neutralia

I have offered three hypotheses about the movement of shell tempered pottery in Neutralia and evaluated each independently. To understand the entire system we should combine these three ideas to create a master narrative for the movement of shell tempered ideas. The movement of potters, ideas and borders were probably all means by which shell tempered ideas came into Neutralia and accepting the plurality of these ideas can create an interesting story that is neither conclusive nor objective. It would be viable to propose that the evolution of agricultural practices was a great enough force to stop groups in the northern tier from resisting the technology of the 'enemy'. As such, the groups closer to the Fire Nation chose to disregard easier cooking procedures to resist against these ideas. Combining these theories creates narratives about the problems that I have set out. What are missing from these narratives are the actual agents of the societies. In the next section I will be looking at agency to establish another attribute for ceramic studies that can be used to visualize active agents in the prehistoric past.

The Importance of Agency

The importance of agents in archaeological interpretation was ushered in by the post-processualists, especially Hodder (1986). Hodder (1986) believed that the study of individuals was one of three important avenues that bridged the gap between archaeological interpretations and theory. Understanding the role of individuals in the archaeological record can produce a fundamental resource for interpretation. The majority of archaeological work has focused on recognizing long term trends that occur within and between societies throughout history. The attempt to look for agency in the archaeological record produces an analysis of smaller trends that make up the larger representation of trends in the archaeologically produced past (Hodder 2000). We realize that individuals create the archaeological record, yet few studies have focused on looking for agency and are more content to believe that society shapes the actions of individuals. Studies that look at changes between societies and within societies assume that individuals took passive roles and lived their lives in the constraints of society. This was probably true for many people, but we cannot ignore that individual agents help change society and social relations.

Historical archaeologists have been at the forefront in achieving successful analyses of agency in the archaeological record (Hodder 1999:137). In prehistory we can only find very few instances where individuals have been identified, or where attempts to look for shorter term flows in the archaeological record have been successful (Hodder 1999:137). Hodder's (1999) interpretation of the 'ice-man' found in the Otzaler Alps was used as an example for archaeologists to visualize active agents in the prehistoric past. In the example of the 'ice-man', an actual human being was analyzed to interpret smaller trends in culture based on the examination of the tools of the 'ice-man' (Hodder 1999). The interpretations that were attained from the analysis of the 'ice-man' as a human agent were than projected on the known larger cultural trends of time and space. The

result was a narrative that combined actual human events with larger social theories.
The analysis of individuals in the prehistoric past can be pursued through many means, even if the actual individuals are not present in the archaeological record. One of the earliest studies of individuals in the prehistoric past was offered by Hill (1977). Hill (1977) attempted to examine the practicality of interpreting individual artisans in the archaeological record through many tests of hand-writing and pottery design. He was able to establish that works of known individuals could be easily identified. More importantly for prehistoric archaeologists, Hill (1977) established that there can be an identification of groups of individuals in the prehistoric archaeological record within a site based on larger associations of individuals. Therefore, prehistoric archaeologists can view individuals within larger groups of people, even though the actual individuals themselves remain nameless. Cunningham (1999) has also used techniques in pottery analysis to look for smaller groups of individuals in prehistoric archaeological sites. He used mechanical traits to look for these individuals by examining pottery sherds for similar tool prints and utilizing cross mending analysis (Cunningham 1999).

The study that I will focus on was one offered by Sassaman & Rudolphi (2001) that attempted to look for individuals by analyzing the right and left handedness of potters. The Sassaman and Rudolphi (2001) study focused on pottery remains found in Late Archaic sites to investigate the transmission of ideas between actual potters on an intra-site level. The angle of the characteristic drag-and-jab punctate designs on the Late Archaic sherds was used to classify the collection of 598 sherds into those that were manufactured by right handed potters and those from left handed potters. The results of the study showed that close to ninety percent of the sherds were right handed and ten percent were left handed (Sassaman and Rudolphi 2001). This average conforms to the contemporary ratio between right and left handed people. The variable of handedness was used by the authors to establish a small scale trend that could be used against larger known cultural changes. At the Hamilton Site the larger trend was the inclusion of shell tempered pottery into the region. Previously theories have lacked a detailed smaller scale analysis of the adoption of shell temper for Neutral ceramics. It is this small scale analysis that I wish to comment on by using the handedness techniques established by Sassaman and Rudolphi (2001) to look for agents in prehistory.

Handedness in Neutral Potters

Establishing the handedness in pottery sherds at the Hamilton will show smaller scale trends that can illustrate how shell tempering came into the area. I believe that identifying handedness is a characteristic that can separate potters into smaller groups that can then be analyzed on the individual level. Therefore, instead of basing ceramic analysis solely on function and form, archaeologists can use the handedness of the potter as another characteristic that allows an analysis of the individual. Sassaman and Rudolphi (2001) have shown that left handedness is a genetic trait is that passed down each generation from the mother. Therefore, females that are born from a left-handed mother are more likely to be left-handed than right-handed. Neutral longhouse organization was matrilineal; therefore, a group of people organized around a female left-handed potter would have higher percentages of left-handed pottery than other longhouses consistently after each generation. If we assume that there was a group of foreign people that had a large group of left-handed potters which came as a family group to the Hamilton site and

brought shell tempering technology with them, then we can easily identify them by comparing shell tempering to left handedness in the pottery sherds. If the group of people that brought shell tempering technology to the Hamilton site had both left and right-handed potters, than it will be impossible to evaluate this hypothesis.

In attempting to identify the handedness of potters in Neutral ceramics, I believed that a rigorous testing method was needed to produce reliable results. Neutral pottery is characteristically designed by using many methods such as stamping, trailing, incising and punctating. I chose to look at incised designs in my analysis because they would have been directly constructed with a sharp instrument that would have been held and moved on the pot by the artisan with one hand, much like drawing with a pencil. I began to experiment with modeling clay and with the help of some fellow students; we were able to produce reference models that had representations of vertical, oblique and opposed designs that were created by right and left-handed individuals. I used these examples to identify right and left handedness in the Neutral pot sherds.

Sassaman and Rudolphi (2001) examined the projected angle of the punctate mark in the pot sherds to establish the handedness of the artisan. Angled marks that pierced the clay from the right were considered to be designed by a right handed individual. Alternatively, incised marks that were pressed into the clay from the left were considered to be created by a left-handed artisan. In the study, Sassaman and Rudolphi (2001) identified two sherds that had been impressed by both left and right handed people which they assume were made by ambidextrous individuals.

I took this concept and examined the angle of the stylus device that would have been used to design incised pottery. From the test experiments with the modeling clay I was able to establish that when a right handed person incises clay, a sharper ridge is formed on the opposite (left) side of the incised line. The right side of the line drawn by a right handed person appears to be smoother than the opposite side of the line. A left handed person drawing the same line would produce the opposite effect. There would be a sharper ridge on the right side of the line with a smoother edge on the left side. Therefore, the smoother side of the line is identified as the same side as the hand of the potter.

The cause of the smooth/rough nature of the incised design is the angle at which the stylus was used. Right handed artisans would hold the drawing tool at a smaller right acute angle from the pot than a left handed person. A left handed person would hold the tool at a more left acute angle to the pot. Through the combination of the analysis of rough and smooth ridges and the projection of the angle from the stylus, determining the handedness of artisans is easier than it appears.

There were many problems that I had to address when examining handedness in the pottery sherds. The first problem that I encountered was establishing a sample. Initially, I only examined decorated rim sherds from the Hamilton site that were designed by a drawing tool where ridges and smoothed sides could easily be identified. This number gave a sample of 104 rim sherds that were tested for their handedness. Designs such as cord roughened, punctate and ribbed paddle techniques were excluded because no stylus was used in this form of design. In a second

examination of the segregated sample I separated another set of 34 rim sherds that were the best representations of pottery created by right and left handed artisans. This second sample only contained designs that were decorated with oblique or vertical lines. Therefore, with the smaller sample I am excluding certain designs.

A second potential problem I encountered was establishing whether angle of the stylus to the pot has a direct correlation with the accuracy of relating handedness. Angles that are more acute are easier to recognize while incised lines that were constructed by drawing tools that were held perpendicular to the pottery surface are much harder, if not impossible to establish handedness. Therefore, I realized that the representative sample on which I judged handedness was based on the sherds that were easiest to recognize and created with low acute angles to the pottery.

A third question relates to how potters handle the pot they are designing. The position that a pot is held during decoration has to be consistent for this method to work. For example, a pot that is held with one hand on the rim so the base of the pot rest on the ground would have different smooth/rough sides and angles than a pot that is laid on its side and spun with the opposite hand. This issue has the potential to skew the results; however ethnographic studies of the Kalinga and other contemporary indigenous groups have shown that larger pots are placed on the ground in front of their designer because they are too heavy and large to be spun on their sides (Aronson, Skibo, and Strak 1994; Longacre 1981; Scheans 1960). To test this theory, I placed the modeling clay on the edge of a large board that represented the size and encumbrance of a Neutral pot. I then had right and left handed individuals attempt to incise the clay with designs that resembled Neutral pottery motifs. The results were that each person sat on the floor with the board facing vertically as if the pot was resting in the ground, while designing the motifs across the top of the board. These results conform to ethnographic studies and to my own views in regards to the hand movement and position of potters.

The final problem I encountered was testing the replicability of my results. I believed that testing my techniques would provide me with greater certainty for my interpretations. Testing was done by allowing people to examine a set of sherds from the second test which I performed. These sherds from the second sample were easier to recognize handedness than the initial sample of 104 pottery sherds. Each test contained five of these easily recognized sherds, three shreds for which it was harder to identify handedness and two sherds for which I had difficulty identifying handedness. Each test subject was briefly taught the techniques to recognize handedness and they each had reference to the modeling clay examples of right and left handed designs. The test subjects could choose whether to answer right handed, left handed, or could not tell the handedness. The results of the test were positive. By removing the two sherds that were undeterminable, the tests showed that the average correct score was 7.5 out of 10. To substantiate the results even further, I had three archaeology professors and one material science professor perform the test. The results of this test group gave an average score of 8.75 out of 10 correct. The combination of the ethnographic analysis, the experimental archaeology, testing procedure and the consistency of testing methods have been used to justify my techniques for identifying handedness.

Table 2: Results of 1st Examination of Handedness on 104 Analysable Rim Sherds at the Hamilton Site

Total # of Sherds	**104**	**Percentages**
Total # of Shell	50	48%
Total # of Grit	54	52%
Total # of Left Handed	29	28%
Total # of Right Handed	75	72%

Table 3: Results of 2nd Test on 34 Analyzable Rim Sherds

Total # of Sherds	**34**	**Percentages**
Total # of Shell	19	55.8%
Total # of Grit	15	44.2%
Total # Right Handed	26	76.4%
Total # of Left Handed	8	23.5%

Results of the Handedness Testing

The results of my two assessments of handedness are summarized in Tables #2 and #3. The first test, which included the analysis of 104 pottery sherds from all the incised rim sherds at the Hamilton site, produced results of 72% right handedness to 28% percent left handedness. Of the total number of sherds tested in the group, 52% were grit while 48% were shell tempered. There were no significant associations between handedness and type of temper for the first sample.

The second analysis consisted of a sample of 34 sherds that were either of the oblique right to left, oblique left to right or vertical line motifs produced interesting results. Of the 34 sherds, 23.5% were left handed while 76.5% were right handed. There were 56% shell tempered ceramics and 44% grit tempered ceramics in this sample and there were no positive correlations between handedness and temper type. It should be noted that the percentages of right and left handedness were very similar between the larger sample and the smaller sample for which I had more confidence (Left handedness 23.5-28% and Right handedness 72-76.5%). The similarity between the percentages of handedness in the two samples helps to corroborate the results.

Since motif type was controlled in the second sample, we can look at the relationship between motif design and handedness. In the smaller sample there was a positive correlation between the right to left oblique motif designs and right handedness.

Interpretations of Results

Unfortunately, positive results that linked temper type and handedness were not found in the experiment which does not help to specifically identify a group of left-handed potters that brought shell-temper technology to the Hamilton Site.

The ultimate goal of this experiment was to see if I could visualize active agents in the prehistory of the Hamilton site. I have produced a set of results that has clearly identified a set of right and left handed potters working within the site. Interestingly, my results indicate there were more left-handed potters at the Hamilton site (23.5-28%), or more pots created by left handed potters than the current average for left handedness in a population (about 10%). Sassaman & Rudolphi (2001) found that close to 10% of the sherds that they analyzed were from left handed potters. My results suggest that almost three times as many left handed pottery sherds were found at the Hamilton site. The different percentages of left-handed potters at these sites may reflect a larger group of left handed potters at the Hamilton site, which are possibly genetically related, and living in the same longhouse. The higher percentage of left-handed pottery sherds at the Hamilton site may be due to the partial excavation of the site. Therefore, artifacts from unexcavated longhouses that were predominantly occupied by right-handed potters have not been recovered.

Temper choice and selection were not based on the potter's handedness. In order for this experiment to identity the movement of a group of foreign potters, I assume that there was a higher percentage of left-handed people in the foreign group. This was obviously not the case, however this could be the case in other sites and situations where movements of single potters, or smaller groups of people that share the same handedness can be traced. At the Hamilton site the results are do not dictate that shell tempering technology came to the Neutral through actual foreign potters or through the movement of ideas.

The results of the second analysis raise some significant questions about the analysis of small scale changes in the larger cultural structure of Neutral life. There was a strong correlation between motif design and handedness. The right to left oblique incised motif was constantly created more times by a right handed potter. Does this indicate that motif design could be based on the ease of motif creation or the handedness of the potter? Previously, it had been suggested that motif design related to the family lineages and more generally motif designs have been used to distinguish different cultural groups.

The results suggest that the reconstruction of pot usage and origins with specific reference to longhouses can be identified within the site. The Neutral organized their villages in terms of matrilineal family groups that lived in separate longhouses. If we assume that the handedness of an individual is passed on from the mother, and females create the pottery, we can trace the groups of left and right handed potters in terms of specific longhouse locations. This gives an added spatial organizational component to site analysis. This is not suggesting that there was a longhouse solely consisting of left-handed potters at that Hamilton site, however it does suggest that handedness may restrict certain motif designs that can be used to look at longhouse organization within the site.

A final issue that arises from the analysis of handedness is the tracing of group movements across long distances. At the Hamilton site, one theory is that shell temper technology was brought to the area by actual potters or even a mass migration of people. If we were to replicate the same handedness tests in regions from which these foreign potters are thought to originate we would be able to produce comparative data sets. We might be able to track the proportions of

right and left handed potters in certain groups of people and determine the origin, destination and moving patterns of such groups.

The analysis of handedness was an attempt to look at individuals in the prehistoric record and to examine smaller changes that have consequence for the larger cultural changes that took place. The results of the tests do not support any one of the theories offered earlier about the movement of shell tempered pottery in Neutralia. However, the handedness results do have important consequences for archaeological interpretation which can be summarized by stating that establishing handedness has the potential to portray smaller trends in the archaeological record at the level of the individual. We will never know the names of the left or right handed potters that created the pottery at the Hamilton site, however, we are now in a situation to measure and interpret some of the individual movements and ideas that occurred in Neutral society.

Conclusions

The attempt to look for individuals through the handedness of potters at the Hamilton site has raised some interesting questions. However, the interpretations that can be made from this specific analysis are unfortunately vague. I have attempted to look for smaller trends that occurred in the production of pottery at the Hamilton site, which were directly related to the influx of shell tempering technology. These analyses have outlined groups of potters based on their handedness. Unfortunately, it cannot be clearly substantiated using the handedness results, that the appearance of shell tempering technology at the Hamilton site was a consequence of the movement of specific ideas or people. Interestingly, the tests of handedness at the Hamilton site suggest that artisan handedness may have some consequence for the motifs that are used to decorate a pot. The test results also show that there were almost three times as many left-handed potters at the Hamilton site than expected. These results may have implications for the analysis of longhouse organization within Neutral sites and have the potential to track the movements of individual potters and larger groups of people. Overall, the technique of recognizing the handedness of individuals was successful. The potential for handedness studies exists with proper excavation techniques that can focus on aspects of smaller trends in past cultures. If handedness is to be utilized as a meaningful interpretative technique in the future, excavation methods such as micro-stratigraphy and broad cross-site analysis must be employed. This will allow for more objective interpretations of the agents present in the archaeological record.

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BEAUCOUP DE RASSADES ROUGES (Or An Ode To Ian)

William A. Fox

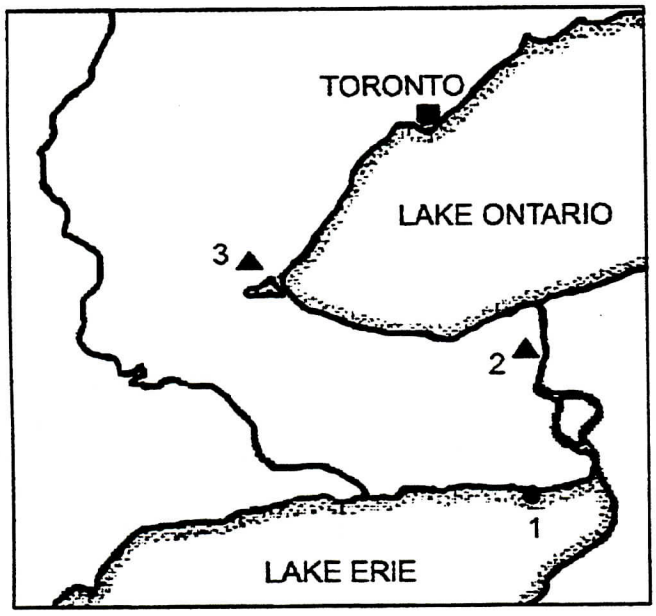

Figure 1: Site Locations. 1: Point Abino; 2: St. David's Cemetery; 3: Lake Medad.

Faithful KEWA readers will know that the writer has been given the opportunity to study former Heye Foundation collections (see Fox 2002), which are now held by the Smithsonian National Museum of the American Indian in their curatorial facilities at Suitland, Maryland. Courtesy of Dr. Pat Nietfeld of the NMAI and with the support of the Canadian Museum of Civilization, access to collections from Ontario were granted once again between November 4 and 6th of last year. The objectives in 2004 were threefold - to complete the recording of box turtle shell rattles, to review and begin recording their Lake Medad site collection, and to document the glass trade beads they hold from Historic Neutral villages.

The first activity contributed to a multi-year study which, hopefully, will result in a monograph concerning the temporal and geographic distribution of such rattles; as well as, an attempt to understand the ceremonial context of these instruments. That objective was accomplished, including documentation of some Florida archaeological specimens held in the adjacent National Museum of Natural History (courtesy of Dr. James Krakker). The writer barely had time to review the extensive Lake Medad collection, but was able to determine that it includes diagnostics from at least Late Archaic through 18th century occupations. The ultimate objective of this project is to bring together evidence from three museum collections, in order to provide fellow researchers with a better understanding concerning an important Ontario archaeological site, the remnants of which lie under a golf course north of Hamilton. The third and final objective was to document, using the Kidd typology (Kidd and Kidd 1970), glass beads from the Point Abino, St. David's cemetery, and Lake Medad sites; in an effort to place these sites chronologically within the "tribal" site sequences documented in their respective areas. While Ontario's first Provincial Archaeologist reported on these sites in varying degrees of detail (Fox 2002), very little has been published subsequently, and only the Point Abino site may remain available for reinvestigation (Figure 1).

The Beads

The writer reviewed and documented both glass and stone (siltstone/catlinite) beads from the following sites; however, only the glass bead data are presented below.

Point Abino

The collection housed in the Smithsonian NMAI consists of only 25 specimens:

2	II bb 1
4	II a 48
1	II a 49
2	II a 6
5	III k 3
6	IV b 34
1	II b 15
3	III m 1 (or IV k 4)
1	IV k 2

This small assemblage includes types present during Glass Bead Period I (GBP I) through GBP IIIa, as well as several types characteristic of GBP III in New York State (Kenyon and Kenyon 1983: 63, 66). While Point Abino would appear to be a Period II/III transitional site dating to the 1620's, it is not greatly similar to the contemporary Misner cemetery to the west, perhaps due to the primitive recovery techniques typical of late 19th century excavations (Kenyon 1985:19).

St. David's Cemetery

The collection includes a mere 18 specimens:

2	I a 1
4	I a 10
3	I a 11
1	I bb 1
1	I c' 1(?)
4	III a 10
2	III c' 3
1	III m 1

Based on the percentage of red tubular beads, this assemblage is GBP IIIb, dating to the 1640's.

Lake Medad

This is a large collection consisting of 1989 specimens:

2	1 a 6
1	1 a 19
61	II a 10
9	II a 48
59	II a 49
135	I a 1
26	I a 11
2	I b 20

3	I bb 1
4	I c' 1
295	II a 40
15	II a 41
8	II a 46
4	II a 51
4	II b 1
19	II bb 1
88	II bb 2
2	II bb 29
5	III a 1
1	III b 7
1	III c 1
15	III c' 3
566	III k 3
21	III m 1
586	IV a 1
11	IV a 16
5	IV b 1
3	IV b 6
1	IV b 13
1	IV b 15
19	IV g 1
1	IV k 3
16	IV k 4

This large and diverse assemblage contains a clear GBP II component totalling 132 beads; but, is primarily GBP III. As there are only 143 red tubes, out of a total of 1857 GBP III beads, this collection would be classified as GBP IIIa (Kenyon and Kenyon 1983: 63), albeit probably late. If, however, the Medad cemetery was used over a similar period of time to that documented at Grimsby (Kenyon and Fox 1982), then the glass bead assemblage represents sporadic use over perhaps a 30 year period (ie. c.1615-1645 A.D.). Unfortunately, we will never know the structure of the Medad cemetery, which appears to have been looted in the 1870's (Fox 2002). One surprising aspect of this portion of the McGregor/Mullock collection is that numerous "seed beads", some as small as 2.5 mm in diameter, were recovered; suggesting that either they were discovered in a mass (formerly attached to a garment?) or the looters were using a fine screen recovery technique. The former seems most likely, especially as 182 of the 197 seed beads (defined as 2.5 - 4.0 mm in diameter) are Type IV a 1, while the remainder are II a 41.

Conclusions

While we will never know the specific context of the above artifacts, nor the exact structure of the sites from which they were recovered, these carefully curated collections do help to clarify the chronological position of these massively disturbed or destroyed Historic Neutral sites. The Point Abino and St. David's collections are limited, but hint at greater interaction with Five Nations groups to the east on the part of the Point Abino population. The diversity of bead types from Medad, including possible New York State varieties, suggests a formerly cosmopolitan and important Historic Neutral village and cemetery complex.

Postscript

Additional glass beads from Historic Neutral sites in the Brantford area (Fox 2002:4) were reviewed, but not recorded, as there was no site-specific provenience provided by Mr. E. C. Waters. The most curious assemblage was labelled "Brock Monument" and consists of 21 red tubular (Type I a 1) glass beads and a string of 35 rosary beads. There can be no doubt about the 1640's dating but a Neutral village/cemetery never has been recorded on Queenston Heights. Albeit, the topographic setting is similar to that of the Elija Ball or Thorold site to the west and the Kienuka site to the east, with a small creek formerly running just southeast of the high ground. A quick review of the c. 1898 handwritten segment of the Heye Foundation catalogue failed to relocate a specific reference to these artifacts (we're still looking), but there was an entry for "1 arrow point" from "Brocks Monument" inserted in the middle of a list of artifacts (including "44 Beads" & "1 Ring brass 'IHS"') acquired from the Crawford farm near Midland. The latter encompasses a 1640's Huron village, which may have contained a satellite mission to the Jesuit station of Ste. Marie. Thus, a catalogue error may explain this "mystery" assemblage.

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